



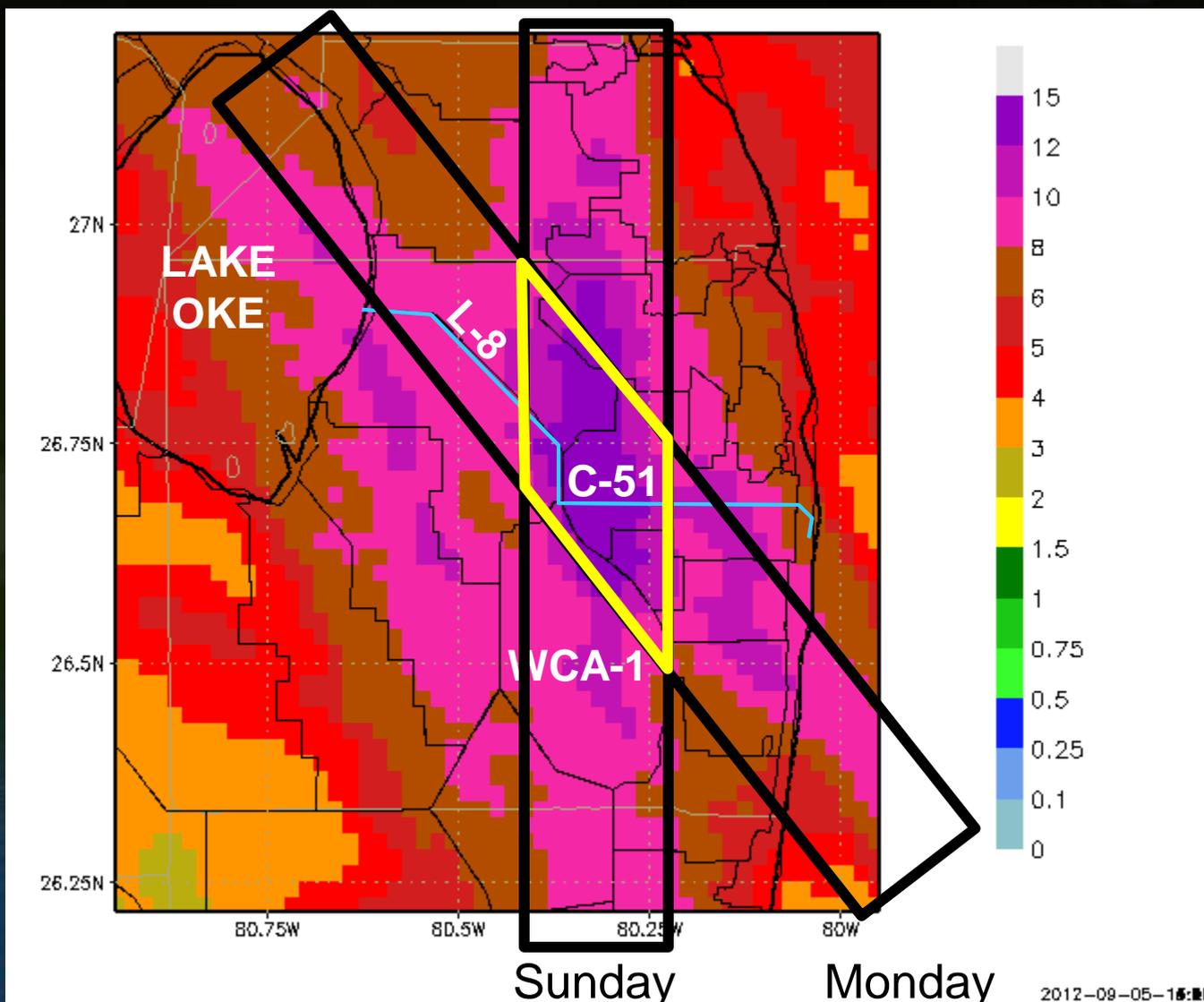
Tropical Storm Isaac After-Action Assessment

Lucine Dadrian, P.E., Project Development
Section Administrator

Background

- TS Isaac impacted the South Florida area in late August 2012 bringing an average of about 4.7 inches of rain with the heaviest rainfall (over 20 inches) recorded in western Palm Beach county.
- Localized flooding conditions during and after the storm were observed in Northern Broward, Palm Beach, Martin, St. Lucie, and South East Okeechobee Counties.
- Flooding conditions were resolved within a short period of time for most of the areas except for western Palm Beach County.

48-Hour Isaac Estimated Rainfall Amounts 8pm Saturday – 8pm Monday (Aug 25-27)



Background

- SFWMD coordinated with the 298 Districts, local government agencies, and EAA agricultural representatives prior to, during and after the storm event
 - Palm Beach County, 298 Districts
 - Indian Trails Improvement District, Broward County League of Cities
 - Everglades Agricultural Area Water Control Operations Group
- Updated the GB on Operational Decisions made during the storm in September 2012
- After Action Assessment for improvements to the system

Coordination Meetings

- Homeland HOA 9/6/12
- Fox Trail HOA 9/11/12
- Post-Storm Roundtable: 298s/PB County 9/12/12
- Indian Trails Improvement District 9/12/12
- Indian Trails Improvement District 9/18/12
- Palm Beach Plantation HOA/CDD 9/19/12
- Wellington Chamber of Commerce 9/19/12
- Deer Run HOA 9/20/12
- Loxahatchee Groves Landowners Assoc. 9/27/12
- Valencia Palms HOA 10/2/12
- Broward League of Cities 10/4/12
- Post-Isaac Meeting: EAA Operations 10/5/13

Operations Data Enhancements

- Post-storm roundtable provided ways to improve communications
- Provide intelligent access to SFWMD water flows
 - Real Time Portal Enhancements
- Improve collaboration with 298s
 - 298 Collaboration
 - 298 Data Collection

Operations Data Enhancements

Real-time Data

- BIG CYPRESS_BASIN
- CLEWISTON
- COASTAL
- ENP
- EVERGLADES AGRICULTURAL_AREAS
- FORT LAUDERDALE
- FORT PIERCE
- HOMESTEAD
- KISSIMMEE
- LAKE OKEECHOBEE
- LAKE OKEECHOBEE



[Refresh](#)

Report generation started at 02/07/2013 14:01:35
Data for this report was last updated on 02/07/2013 13:51:21

STA1W

Click on a record below to view detailed Data.

- "db" link is to DBHYDRO information
- "JN/SITE" locations can be a Junction (JN) or Site
- Hydraulic Element Set (HES) name suffix designate the control types of -C (Culvert), -P (Pump), -L (Lock), -S (Spillway), or -F (Flashboard).
- Upstream, Downstream, and Flow data are in black color if the value is recorded in last one hour. Purple if between 1 and 24 hours. Brown if more than 24 hours old.

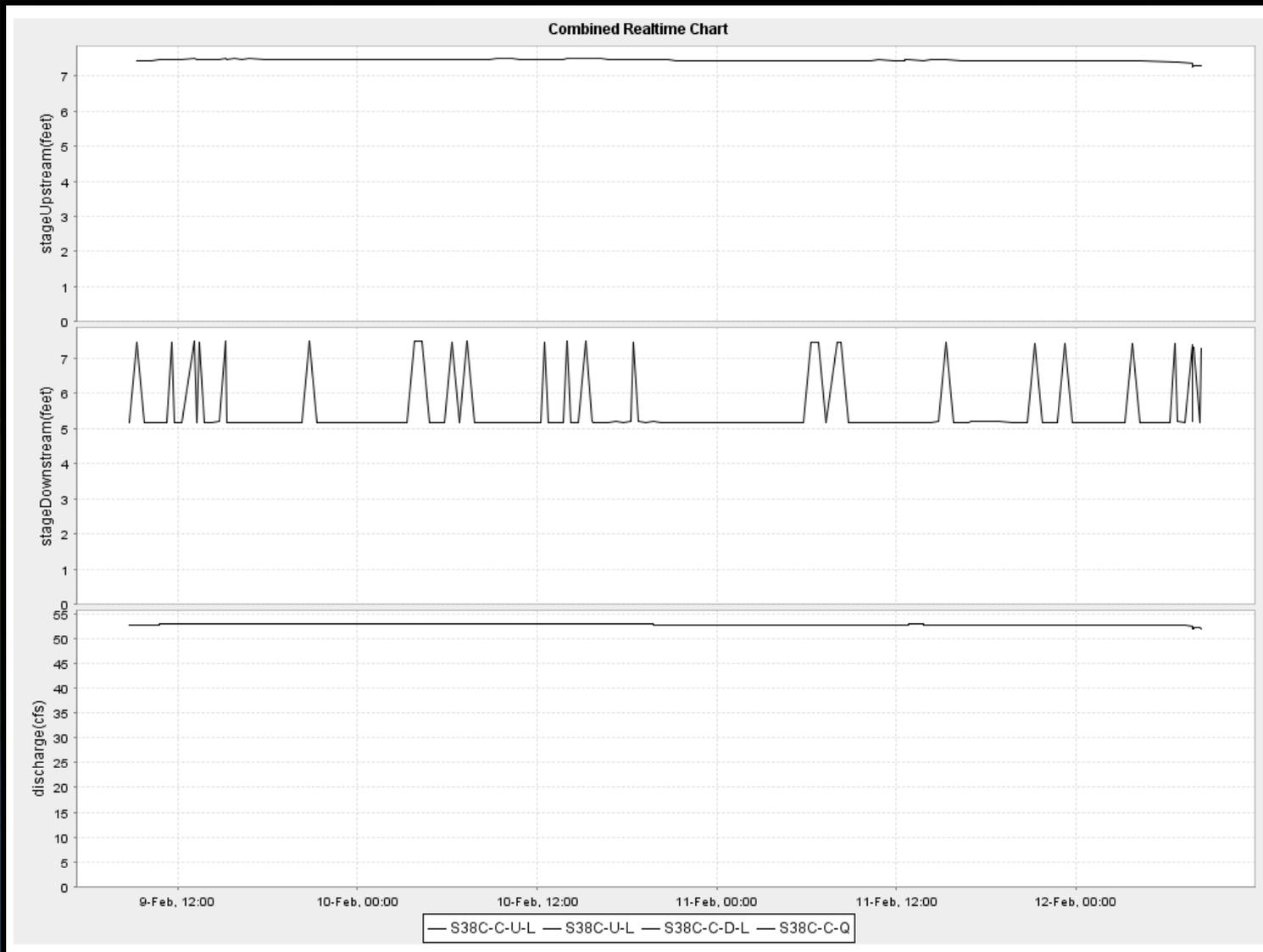
db	JN/SITE	HES	UPSTREAM	DOWNSTREAM	Flow	STATE	Gates - (Opening in Feet)						
							1	2	3	4	5	6	7
db	G250S	G250S-P	7.35	11.85	0	3 Pumps on	0	0	0				
db	G251	G251-P	11.65	16.28	0	6 Pumps on	0	0	0	0	0	0	
db	G255	G255-C	11.84	11.72	243	3 Gates open @4.49ft, Weir State Unavailable	Unavailable	4.48	Unavailable	4.50	Unavailable	4.49	
db	G259	G259-C	11.65	9.75	0	All Gates Closed	.00						
		G308-S	11.58	9.69	0	All Gates Closed	.01						
db	G303	G303-S	15.49	11.96	385	2 Gates Open @1ft	1.00	1.00					
db	G310	G310-P	9.78	16.28	0	6 Pumps on	0	0	0	0	0	0	
db	G327A	G327A-C	9.70	7.41	0	All Gates Closed	-.02						
db	G327B	G327B-P	7.41	10.04	0	1 Pump on	0						

Operations Data Enhancements

Rainfall

Stage

Flow



Operations Data Enhancements



Welcome PUBLIC

[My Home](#) | [Email](#) | [Directory](#) | [Search](#)

[Help Desk](#) | [Contact Us](#) | [Logout](#)

SFWMD North

SFWMD South

SFWMD Central

298 North

Local Government North

298 South

Broward County Water Management Division

Central Broward Water Control District

Cooper City Utilities

Coral City Improvement District

Davie Utilities

Local Government South

Broward County Water Management Division

Main
Map

Name	Title	24hr Phone Number	Email	
John Crouse	Director	954-831-0751	jcrouse@broward.org	delete
Alan Garcia	Director WWS	954-831-0704	agarcia@broward.org	delete

Add New Contact

Name:

Title:

Phone:

Email:

[Send Group Email](#)



[Privacy Policy](#) | [Disclaimer](#)

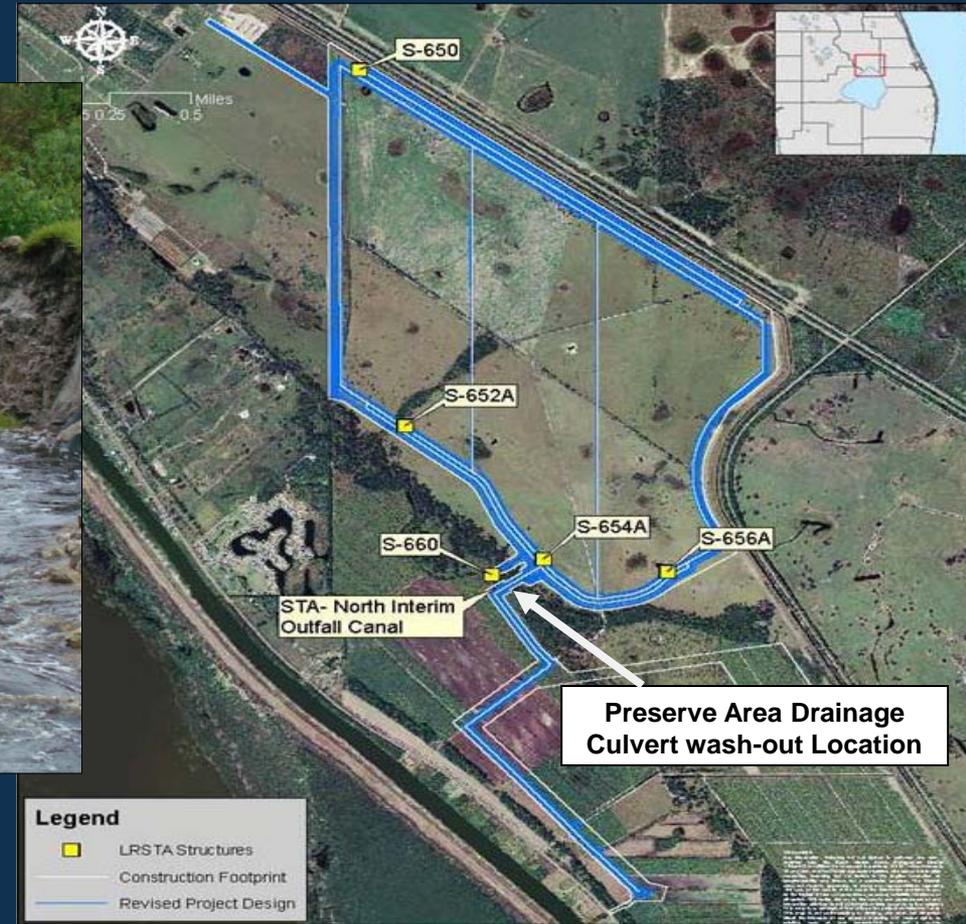
Background

- FEMA issued a disaster declaration, FEMA-4084-DR, dated October 18, 2012, for Hurricane Isaac.
- The declaration lists the designations and types of approved assistance for Hurricane Isaac as follows:
 - Individual Assistance to individuals and households,
 - Public Assistance for emergency work and the repair or replacement of disaster-damaged facilities, and
 - Hazard Mitigation Grant Program assistance for actions taken to prevent or reduce long term risk to life and property from natural disasters.
 - FDEM has applied to FEMA for Hazard Mitigation Grant Program funding

Observations & Findings

Lakeside Ranch STA

- Structural damage - culvert and levee road washout



Recommendations

Lakeside Ranch STA

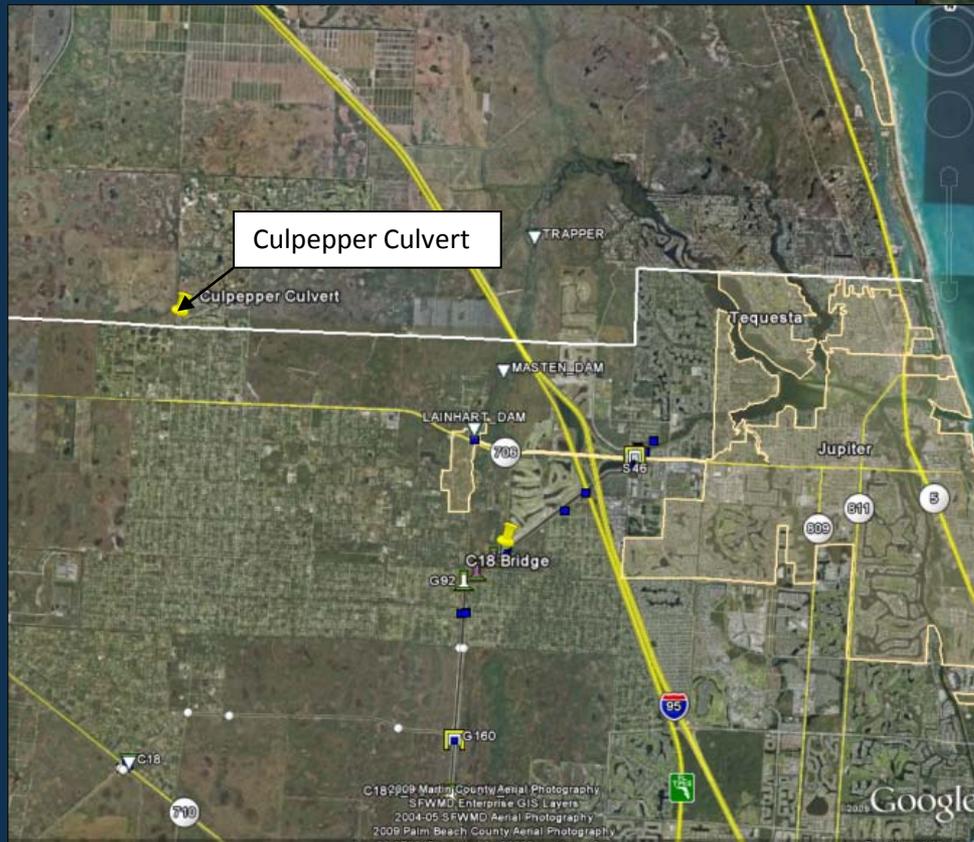
- Washed-out culvert temporarily repaired to allow sufficient drainage of the preserve and provide erosion protection of the Outfall Canal bank
- No further action required at this time



Observations & Findings

Culpepper Property Culvert

- Roadway collapse resulting from erosion around the underlying culvert



Recommendations

Culpepper Property Culvert

- Damaged culvert and roadway repaired in-house by FS staff
- Material for the repair was supplied by Martin County



Observations & Findings

Taylor Creek STA

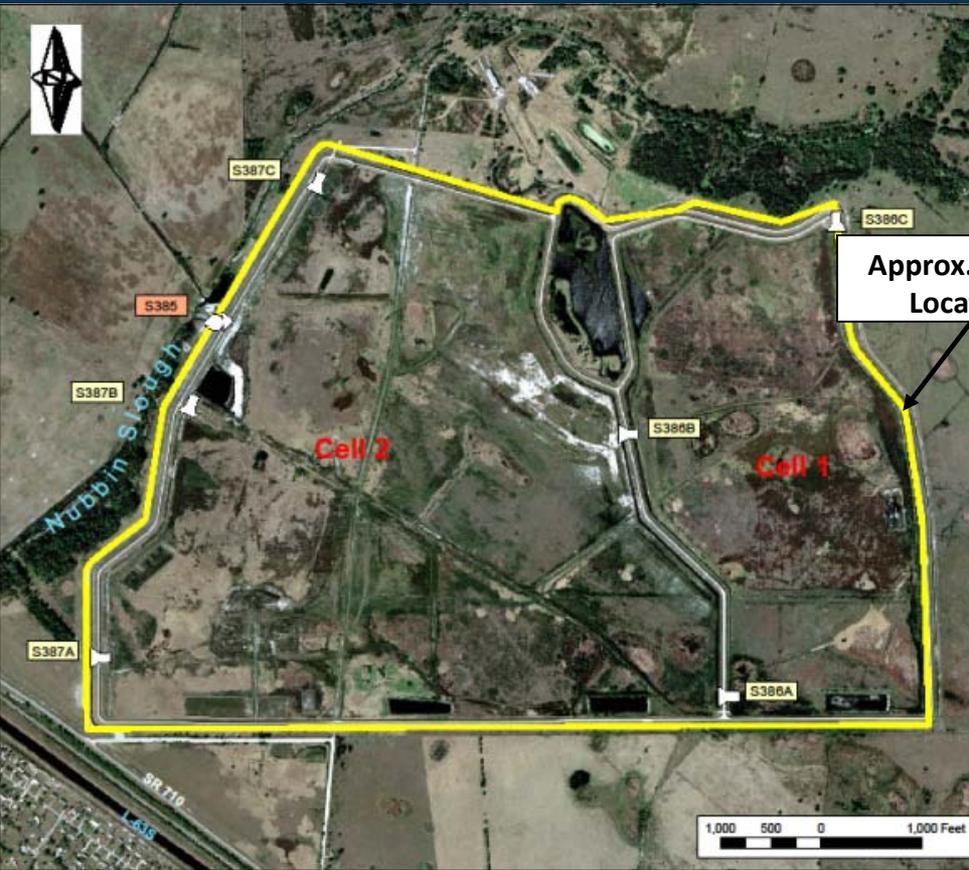
- Severe flooding rendered WQ monitoring stations @ PS S-390 inaccessible - No structural damage.



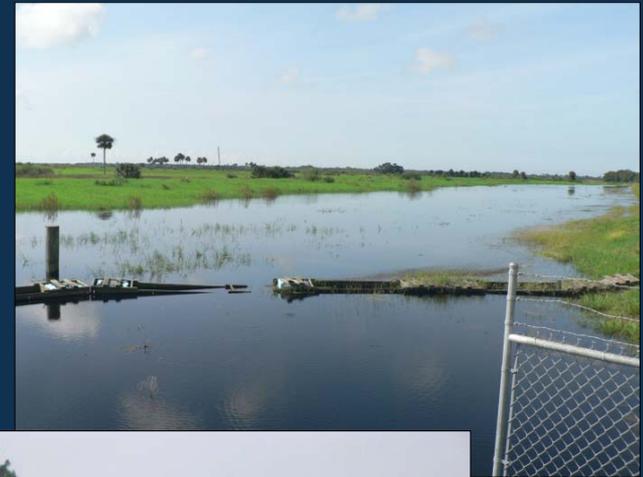
Observations & Findings

Nubbin Slough STA

- Erosion, bank sloughing and piping from an abandoned under-drain system – No Structural damage



Approx. Piping Location



Recommendations

Taylor Creek STA

- The STA was put back in operation two (2) days after the storm and the WQ monitoring station became accessible once the water levels had receded
- No further action is required

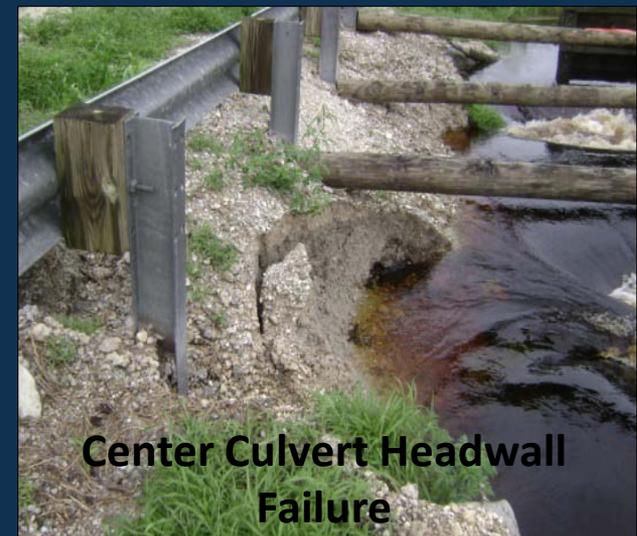
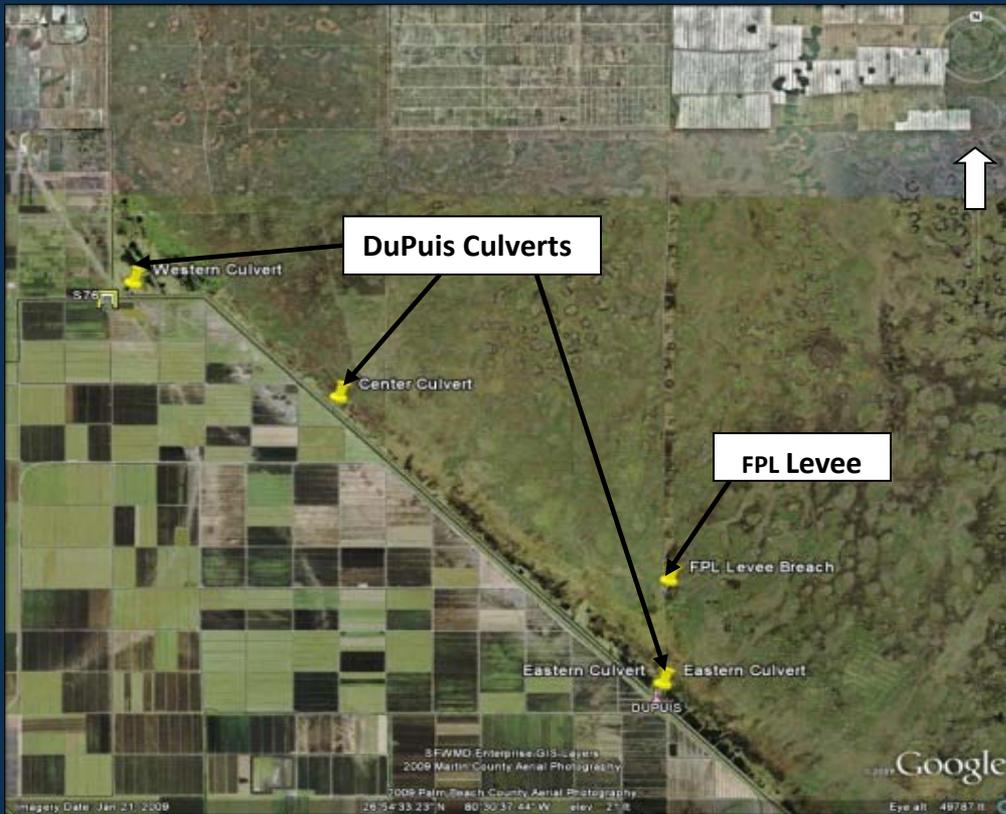
Nubbin Slough STA

- USACE developing a plan of action/remedy for repair of the STA
- Underground pipes under levee sections to be grouted
- SFWMD to implement the repairs from the plan

Observations & Findings

DuPuis Management Area

- Flooding – FPL access road
- Erosion - culvert and headwall damage



Recommendations

DuPuis Management Area

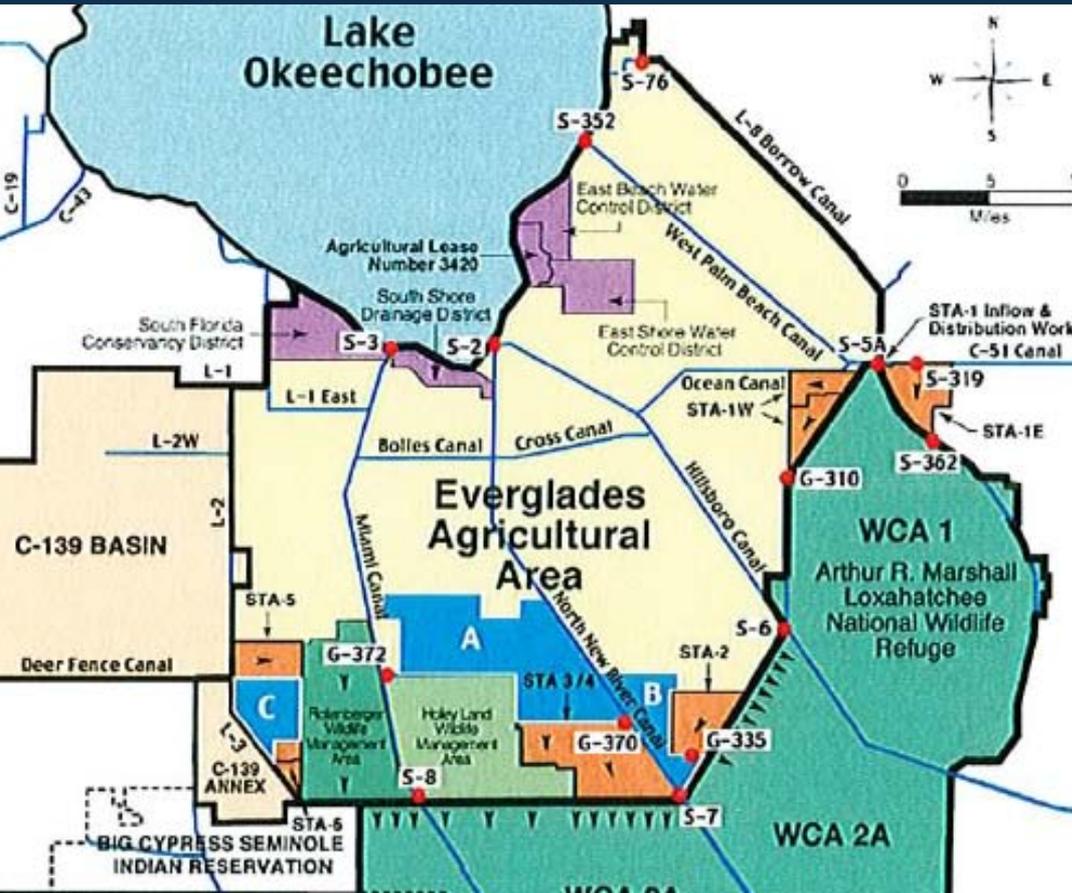
- Rip rap placed behind headwalls
- FPL Service Road breach repaired



Observations & Findings

Ocean (L-13), Bolles (L-21) & Cross (L-16) Canals

- Flooding and high water stages in the Ocean (L-13) and Cross (L-16) canals overtopping farm roads & fields



Hundley Farms ditch north of Ocean Canal



Levee road on north side of L-16 repair work

Recommendations

Ocean (L-13) Canal

- Remove canal conveyance constrictions located east of G-341



Recommendations

Cross (L-16) Canal

- Increase L-16 canal capacity, includes blasting
- Replace infrastructure constricting canal section
- Remove hump in canal bottom of North New River



Recommendations

Bolles (L-21)

- Repaired two low areas of the levee along the L-21 by FS Staff
- Increase L-21 canal capacity, includes blasting
- Replace infrastructure constricting canal section
- Perform updated modeling of the EAA system to determine if pumps, canal modifications or other facilities may be required to send additional flows south to the A1 FEB and west to STA 5/6



Recommendations

Bolles & Cross

- Other improvements to infrastructure affected by construction
- Includes Ag Pump Stations and Culverts

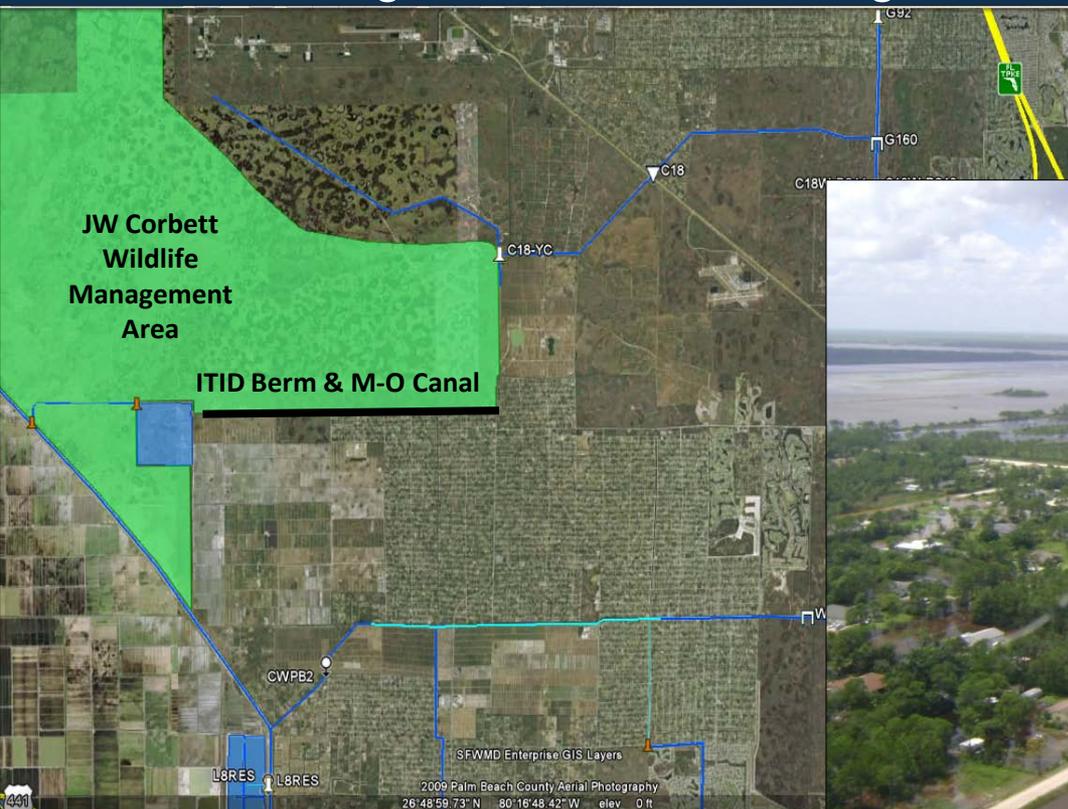
West Bolles (L-26)

- Feasibility Study of Bolles (L-26) westward extension to L-2 and potential pump station at L-2 to pull water west and send south to STA 5/6
- Bolles (L-26) westward extension to L-2 and pump station
- Includes 7 miles of new canal and 600 cfs pump station

Observations & Findings

JW Corbett Wildlife Management Area

- Flooding in local area and high waters in Corbett



Observations & Findings

JW Corbett Wildlife Management Area

- Berm slope failures, longitudinal cracks, and boils due to high water levels



Interim Repairs

JW Corbett Wildlife Management Area

- Interim repairs to berm



Interim Repairs

JW Corbett Wildlife Management Area

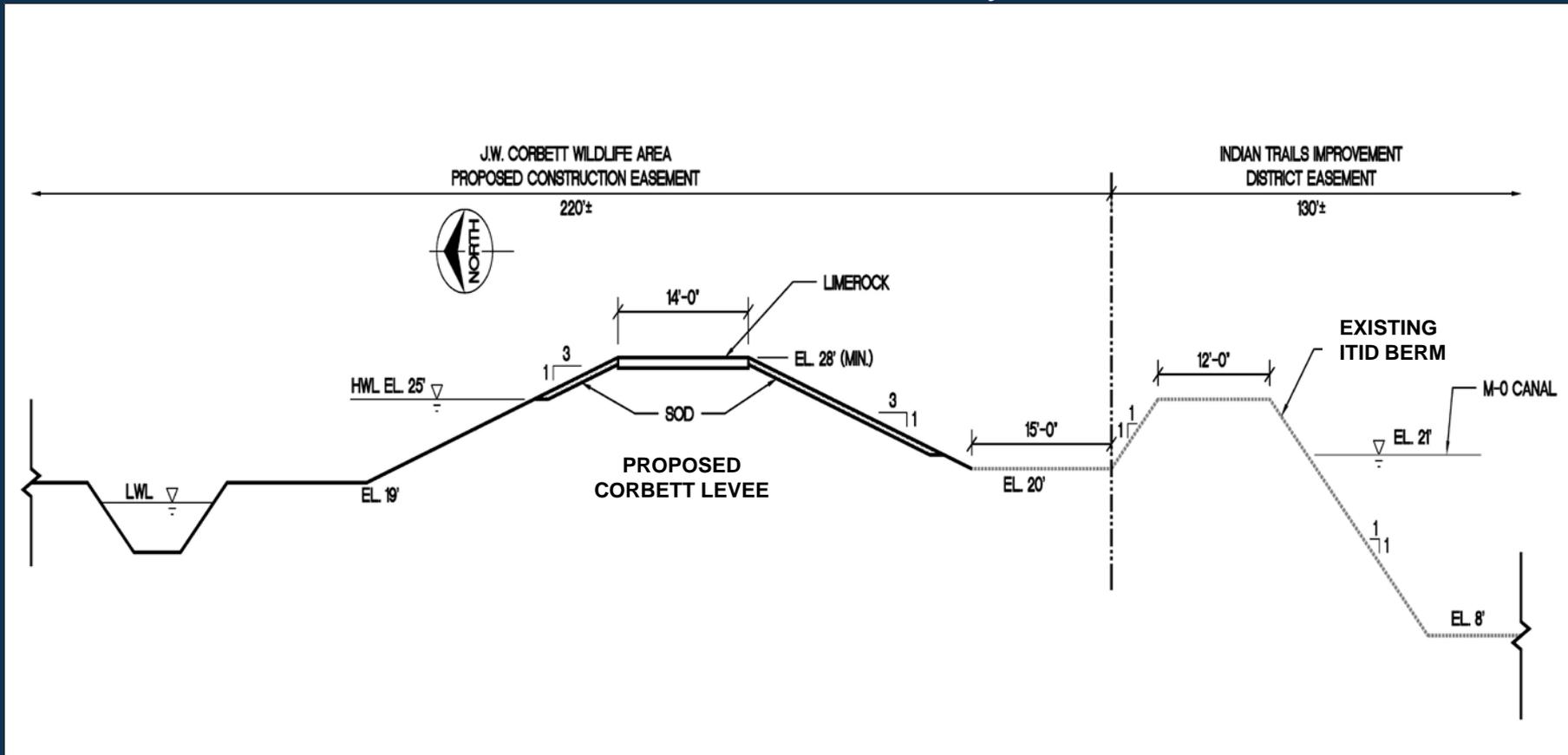
- Interim repairs – construction of 140' overflow weir



Recommendations

JW Corbett Wildlife Management Area

- Planned improvements to include a new 5.7 mi. levee north of current berm and M-O canal between Pratt Whitney Road and ITID PS3



Summary

JW Corbett Wildlife Management Area

- Preliminary studies underway
 - survey and geotechnical
- Modeling of Corbett system
 - to include ITID, Dupuis and SFWMD systems
- Monthly meeting with stakeholder team
 - interagency project meeting held on Friday, March 1, 2013
- Design of Levee System
 - to meet 100-yr storm event
- Funding is currently in the Governor's Budget
- Complete construction by end of 2015

Questions

